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PROBLEMS ENCOUNTERED IN THE COMPILATION AND UTILIZATION OF INDEXES OF PRICES AND QUANTITIES - POSSIBLE SOLUTIONS

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PROBLEMS ENCOUNTERED IN THE COMPILATION AND UTILIZATION OF INDEXES OF PRICES AND QUANTITIES - POSSIBLE SOLUTIONS

In ARE, the CAPMAS compiles group of indexes :

A. Consumer price index.
B. Wholesale price index.
C. Index numbers of foreign trade.
D. The industrial production index.
E. Wages indexes.
F. The agricultural production index.

A. Consumer price index

Base year

The arithmetic mean of months of the fiscal year 1966/1967.

Scope of the index

The index covers urban and rural areas. The urban areas include the capitals of some selected governorates : 3 in Upper Egypt; 3 in Lower Egypt, besides Cairo, Alexandria, Canal zone cities. These capitals are as follows:

1. Cairo, Alexandria and Canal Zone (Port Said, Ismailia, Suez).
2. Zagazig, Tanta, Damanhour (Lower Egypt).
3. Beni Suef, Sohag, Aswan (Upper Egypt).

For each capital an index is issued monthly. As for rural areas, 57 villages are selected from the above six governorates, 3 for Upper Egypt located along the river Nile vally, and 3 for Lower Egypt, one at the eastern part of the Delta, other at the middle, the third at the western part of the Delta; 32 villages from Lower Egypt and 25 villages from Upper Egypt. The rural index is issued bi-monthly.

The above selection of governorates, large cities, villages, is based on the proportional importance and geographical site of each one.

Coverage

The urban index is classified into 7 main sections which are divided in turn into 21 groups, containing 245 commodity and service items, meanwhile the number of commodity and service items in the rural areas total 65.

Weights used

Weights used in the index are derived from the family budget survey 1964/965.

The values of expenditure on commodity and service items were taken as a base for the calculation of these weights.

Method of calculation

The consumer price indexes are calculated for each city and rural region as follows:

1. The price relative for each consumed item is calculated by averaging the price relatives of commodities or services of this item according to the formula $\frac{\Sigma X}{N}$.

   where X is the price relative and N is the number of commodities or services consumed.

2. The indexes of groups, sections and all items are calculated according to the formula

$$I = \frac{\Sigma X W}{\Sigma W}$$

   where X is the price relative of the consumed item or the index of the group or the index of the section. W is the weight of the consumed item or group or section.

3. When compiling the general index (all items) the number of population in each of the selected governorates in the 1966 population census is used as weights.

Problems

1. Weights

It is known that weights used in calculating the consumer price index are derived from the family budget survey results, in Egypt this survey is carried out every ten years. This interval is so long to follow the rapid changes in the consumption trends. This interval will become five years.

To solve this problem

Shortening the intervals between the surveys is preferable if it is possible.

2. Housing index

The rent index is considered as the only problem in the housing index because the rent has been taken as a constant value from the base year until now not taking in consideration new buildings especially because the rent value is fixed between the owner and the tenant.

To solve this problem

It is advisable that a housing sample survey should be performed to follow the variations in the rent value of the housing units every now and then.

3. Substitution

When any changes happen in the quality of an item consumed or this item became out of consumption.

To solve this problem

We substitute another item having similar qualifications, the new item is priced in the base year with reference to the current price of the new item and that of the disappearing item, as follows:

$$\frac{\text{Price of new item}}{\text{Price of disappearing item}} \times \text{base price of the disappearing item}$$

4. Reporting errors

To solve this problem

Data collectors should imply their observations and modify these inaccurate data.

B. Wholesale price index - 1965/1966 = 100

Base year

The arithmetic mean of months of fiscal year 1965/1966 are taken as a base year for the index.

Scope of the index

The wholesale price index does not relate to a certain city or governorate, it represents the country as a whole.

Coverage of the index

The index covers about 440 commodities, these commodities are selected according to their average values in the years 1964/1965 - 1965/1966. The value of each item is the domestic production, plus imports. Three respondents which deal in wholesale trade are selected for each item.

The commodities are specified to reflect changes in prices only. The industrial commodities are specified according to their trade marks. As for the agricultural commodities they are specified in such a way that every commodity is given distinct characteristics.

The prices surveyed are wholesale prices. Where wholesale prices are not available, the producer prices are used.

Classification of the index

The indexes are classified according to the wholesale trade classification mentioned in the Standard Arab Classification of Economic Activities. According to this classification, the index is divided into 17 divisions which are further divided into 41 sub-groups, including 440 commodities.

This classification is complemented by two other classifications, the first according to the end use, the other according to the stage of processing.

Weights

Weights of the index are derived from average values of domestic, agriculture and industrial production, plus the value of imports in the year (64/65 - 65/66).

Formula

The weighted arithmetic average of price relatives is used :

$$\frac{\sum \frac{P_n}{P_o} P_o q_o}{\sum P_o Q_o} \times 100$$

where P_n, P_o are prices in current and base periods

P_o Q_o are the average value of production and imports in the years (64/65 - 65/66).

Problems

The problems facing the wholesale price index are :

1. Seasonality which is clear in case of vegetables and fruits groups. To solve this problem we assign the weights of the disappearing commodities to the weights of the remaining commodities in the same group according to its weight in the years (64/65 - 65/66).

2. Changes in quality : commodities entering the index are selected in a way that they are not subject to changes in a short period. If a commodity disappears, a similar kind and grade is replaced, and a base price is obtained for the new item as follows:

$$\frac{\text{price of new item}}{\text{price of disappearing item}} \times \text{base price of the disappearing item}$$

C. Index numbers of foreign trade - 1965 = 100

Frequency of compilation: annually.

Scope of index : the index indicates changes in exports and imports.

Base year : the year 1965 is taken as a base year for imports and exports indexes.

Indexes issued :

Three indexes are issued for exports and imports :

1. The value index.
2. The price index.
3. The quantum index.

Coverage :

Items entering in the index are selected both from exports and imports according to the value of each item in base year. For exports items with a value of 50.000 EP or more in the base year are selected for coverage, for imports, this value is 25.000 EP or more.

The items selected according to this criterion cover 96.4 per cent of the total value of exports and 90.9 per cent of the total value imports. Assuming that the items not included in the index (less than 50.000 for exports and 25.000 for imports) take the same direction in price changes as follows :

- for exports, the items are classified according to the degree of processing :

  . 1 - Fuel
  . 2 - Cotton
  . 3 - Raw material
  . 4 - Semi-finished products
  . 5 - Finished products.

- for imports, the items are classified according to end use:

  . 1 - Fuel
  . 2 - Raw material
  . 3 - Intermediate goods
  . 4 - Capital goods
  . 5 - Durable consumer goods
  . 6 - Non-durable consumer goods.

Weights used

For price index the quantities of each in the current year is taken as weight for the index. Paache formula is used. The value index is relative of the value in the current year and base year, and that is for each group. The quantum index is a derived index by dividing the value index by the price index. Laspayres formula is used.

Formula used

Three formulae are used, one for index value, one for index of price and one for the index of quantum :

1. Value index $= \frac{\sum P_n \; Q_n}{\sum P_o \; Q_o} \times 100$

2. Price index $= \frac{\sum P_n \; Q_n}{\sum P_o \; Q_n} \times 100$ "Paache"

3. Quantum index $= \frac{\sum P_o \; Q_n}{\sum P_o \; Q_o} \times 100$ "Laspayres"

where P_n, P_o are the prices in the current and base years;

Q_n, Q_o are the quantum in the current and base years.

D. Industrial production index - 1966 = 100

The indexes indicate changes in the value of industrial product.

Base year : 1966 = 100.

Frequency : Annually.

Scope of index: the index covers the following industrial activities:

- Mining and quarrying
- Manufacturing industries
- Gas and electricity.

The index does not relate to a certain city or zone but it represents the country as a whole.

Weights

The net value added for each activity during the period July 1965 - June 1967 is used as weights.

Elementary series

The elementary series of relatives are based on value of gross output in each industry deflated by wholesale price indexes with 1965/1966 as a base.

Method of calculation

The indexes are calculated as fixed weighted arithmetic averages of relatives of deflated gross value of output in each industry.

Formula used

The Laspayres formula, by using the net value added as weights, where

P_n, P_o : deflated values of industrial products in current and base years ;

V_o : net value added in the base year.

E. Wages indexes

Under study and not final.

F. The agricultural production index

Under study and not final.